

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 39

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte IRVING GORDON, STANLEY A. SOJKA,  
and MILTON P. GORDON

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Appeal No. 1995-3249  
Application No. 07/670,644<sup>1</sup>

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ON BRIEF

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Before WINTERS, WILLIAM F. SMITH, and LORIN, Administrative Patent Judges.

WINTERS, Administrative Patent Judge.

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<sup>1</sup> Application for patent filed March 18, 1991. According to appellants, this application is a continuation-in-part of Application No. 07/369,886, filed June 22, 1989, now abandoned.

### DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 3, 4, 7, 9, 10 and 12 through 25, all the claims remaining in the application.

Claims 21, 15, 16 and 19 are representative:

21. A plant transformation construct comprising the following DNA elements operably joined in a 5' to 3' direction:

- (a) a transcriptional initiation regulatory element functional in plants;
- (b) a structural gene encoding a catechol dioxygenase; and
- (c) a transcriptional termination regulatory element functional in plants.

15. A transgenic plant cell containing, as part of its genome, a plant transformation construct according to Claim 21.

16. A transgenic plant whose progenitor is a transgenic plant cell according to Claim 15.

19. A method of degrading aromatic compounds in soil comprising planting in said soil a transgenic plant according to Claim 16.

The references relied on by the examiner are:

Olsen	4,508,824	Apr. 2, 1985
Fillatti et al. (Fillatti)	4,795,855	Jan. 3, 1989
Stalker (European patent application)	0,229,042	Jul. 15, 1987

M.M. Zukowski et al. (Zukowski), "Chromogenic Identification of Genetic Regulatory Signals in *Bacillus subtilis* Based on Expression of a Cloned *Pseudomonas* Gene," 80 PNAS 1101-05 (1983).

R.H. Don et al. (Don), "Transposon Mutagenesis and Cloning Analysis of the Pathways for Degradation of 2,4-Diclorophenoxyacetic Acid and 3-Chlorobenzoate in *Alcaligenes eutrophus* JMP134(pJP4)," 161 Journal of Bacteriology, no. 1, 85-90 (1985).

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E.J. Perkins et al. (Perkins I), "Use of *Alcaligenes eutrophus* as a Source of Genes for 2,4-D Resistance in Plants," 35 Weed Science Suppl 1, 12-18 (1987).

B. Frantz et al. (Frantz), "Organization and Nucleotide Sequence Determination of a Gene Cluster Involved in 3-Chlorocatechol Degradation," 84 PNAS 4460-64 (1987).

E.J. Perkins (Perkins II), Dissertation entitled "The Molecular Biology of the Halogenated Aromatic Catabolic Plasmid PJP4," Washington State University, UMI Dissertation Information Services No. 8813086 (1987).

The claims stand rejected as follows:

I. Claims 3, 4, 7, 9, 10, and 12 through 25 under 35 U.S.C. § 112, first paragraph, as based on an inadequate written description and lack of enablement.

II. Claims 3, 4, 7, 9, 10, and 12 through 25 under 35 U.S.C. § 112, first paragraph, based on scope of enablement.

III. Claims 3, 4, 7, 9, 10, 12 through 17 and 19 through 22 under 35 U.S.C. § 103 as unpatentable over Stalker, Olsen, Zukowski, Frantz, Perkins I and Perkins II.

IV. Claim 18 under 35 U.S.C. § 103 as unpatentable over Stalker, Olsen, Zukowski, Frantz, Perkins I, Perkins II and Fillatti.

V. Claims 23 through 25 under 35 U.S.C. § 103 as unpatentable over Stalker, Olsen, Zukowski, Frantz, Perkins I and Perkins II and Don.

VI. Claims 22 through 24 under 35 U.S.C. § 112, second paragraph, as dependent upon a canceled base claim.

### DISCUSSION

#### The rejections under 35 U.S.C. 112, 1st paragraph

There are two rejections of all the claims under the first paragraph of 35 U.S.C. § 112. See the Answer, pages 6 through 8. On the surface, rejection I appears to be based on the written description requirement of the statute, as well as the requirement for an enabling disclosure. On closer inspection, however, we are unable to identify reasoning which would explain why the specification does not provide adequate written descriptive support for the claimed invention. All of the concerns raised by the examiner actually appear to have a bearing on whether or not the claims are based on an enabling disclosure. Rejection II is based solely on the requirement for an enabling disclosure.

It is well settled that the examiner bears the initial burden of explaining why one skilled in the art would reasonably doubt the objective truth of statements relied on for enabling support. In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971). Having carefully reviewed the specification, including the working examples, in light of the examiner's commentary on pages 6 through 8 and 10 through 26, we hold that the examiner has not set forth a reasonable basis for questioning the enablement of the claims on appeal.

On reflection, we believe that the principal flaw in the examiner's reasoning is a failure to adequately acknowledge the level of skill in the art at the time of appellants'

invention. Merely by way of example, we note the examiner's concern that "[w]ithout a written description providing gene sequence information, one of skill in the art could not obtain the genes encoding the various classes of enzymes or otherwise make the DNA used to construct the transformation vectors or the bacteria and plants containing same without undue experimentation." See the Answer, page 6. Yet, the record establishes that at the time of the invention, genes encoding aromatic ring-opening enzymes from *Pseudomonas* were widely known, and genes encoding various catechol dioxygenases had been characterized and cloned for use in a wide range of host organisms. See the Answer, page 9.

Accordingly, both rejections of claims 3, 4, 7, 9, 10 and 12 through 25 under 35 U.S.C. 112, first paragraph, are reversed.

The rejections under 35 U.S.C. 103

The claimed invention is directed to plant transformation constructs containing structural genes encoding bacterial catechol dioxygenases, bacteria containing the plant transformation constructs, transgenic plants transformed with the constructs, and a method of degrading aromatic soil contaminants using the transgenic plant.

Stalker ("the primary reference") and Perkins I ("the tertiary reference") establish that transgenic plants capable of deactivating compounds normally toxic to them (i.e.,

herbicides) were known in the art at the time of the invention. Neither reference discloses transgenic plants expressing catechol dioxygenase. Perkins II (another “tertiary reference”) does not relate to transgenic plants. Olsen, Zukowski and Frantz (“the secondary references”) establish that aromatic ring-opening genes from *Pseudomonas* were widely known, and genes encoding various catechol dioxygenases had been characterized and cloned for use in a wide range of host organisms.

The examiner concludes that it would have been obvious for “one of ordinary skill in the art to modify the primary reference with the teachings of the secondary and tertiary references in order to make transgenic plants that tolerated and degraded toxic compounds with a reasonable degree of success.” See the Answer, page 9.

We have no doubt that the prior art could be modified in the manner proposed by the examiner, but the fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Here, we find no reason stemming from the prior art which would have led a person having ordinary skill to the claimed invention. In our judgment, the only reason or suggestion to combine the references in the manner proposed by the examiner comes from appellants’ specification.

Moreover, as acknowledged by the examiner in the statement of the rejection, obviousness under 35 U.S.C. § 103 requires a reasonable expectation of success.

In re O'Farrell, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). After careful review of the references and reasoning presented in the Answer (pages 26 through 29) and appellants' Brief (pages 23 and 24), we find ourselves in agreement with appellants that the examiner has not established that a person of ordinary skill in the art, at the time of the invention, would have had a reasonable expectation that bacterial catechol dioxygenase would be functional in a plant, or that the bacterial enzyme would function in concert with plant degradative enzymes to produce more extensive degradation than catechol dioxygenase alone.

In addition to the references already discussed, Fillatti and Don ("quaternary references") were cited in the rejections of claims 18 and 23 through 25 under 35 U.S.C. § 103 (rejections IV and V). Neither reference remedies the underlying deficiency in the examiner's conclusion of obviousness.

Accordingly, the rejections of claims 3, 4, 7, 9, 10 and 12 through 25 under 35 U.S.C. § 103 are reversed.

Rejection under 35 U.S.C. § 112, second paragraph

We note appellants' effort to amend claims 22 through 24 to depend from a pending claim, rather than canceled claim 1. We have no authority to review the examiner's denial of entry of the proposed amendment. That being the case, the claims

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remain dependent upon a canceled base claim, and the rejection of claims 22 through 24 is affirmed. We note, however, that these claims would be free of rejection upon amendment to depend from an appropriate pending claim.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

SHERMAN D. WINTERS	)	
Administrative Patent Judge	)	
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	)	
WILLIAM F. SMITH	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
HUBERT C. LORIN	)	
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